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Education

The Weizmann Institute of Science, Rehovot, Israel

Ph.D., Experimental High Energy Physics (August 2010)

- Thesis Topic: ϕ and ω - meson production at RHIC energies using the PHENIX detector.
- Advisor: Professor Itzhak Tserruya

Master of Science (M.Sc.) (Physics), University of Jammu(J&K), India 2002

Bachelor of Science (B.Sc.), University of Jammu (J&K), India 1999

Awards

- Qualified the National Eligibility Test in Physics conducted by University Grants Commission in INDIA.
- Junior Research fellow of the Department of Science & Technology,Government of India, for six months in 2003.
- Secured 3rd position in B.Sc. in order of merit in Jammu University(J&K), India.
- Secured the first prize twice in the Alka Memorial Mathematical Competition, conducted by the Department of Mathematics, University of Jammu(J&K), India, during B.Sc.

Schools and Symposiums attended

- IVth Science & Engineering Research Council School (SERC) on Experimental High Energy Physics held at Variable Energy Cyclotron Center (VECC), Kolkata, India.
- XV Department of Atomic Energy (DAE) Symposium on High Energy Physics held in the Department of Physics, University of Jammu(J&K), India.

Talks at the conferences

- ϕ- meson production at RHIC energies using the PHENIX Detector (*given at SQM08, Beijing China*).
- Low mass vector mesons measurements via di-electrons at RHIC by PHENIX experiment (*given at PANIC08, Eilat Israel*).
- Electromagnetic probes and heavy flavor (*given at ICPAQGP 2010, Goa India*).

Area of Research

- At present, I am a memeber of the PHENIX experiment at the Relativistic Heavy Ion Collider at BNL, USA. My Ph.D. is focussed on two parts.
  - I participated in the construction, installation and commissioning tests of a novel Hadron Blind Detector(HBD),which is built as an upgrade for the PHENIX detector to enhance the low mass dilepton measurements. The HBD is a windowless $\check{C}$erenkov detector with pure CF_4 in a special proximity focus configuration, with CsI photo-cathode and a triple-GEM detector element with pad readout. The HBD was installed in year 2007 inside PHENIX, which was a commissioning run. I served as an HBD expert during this run and was involved in the commissioning tests, data analysis and gain calibrations. The final detector was installed in the year 2008 and took data in 2009 $(p+p)$ and 2010 $(Au+Au)$runs. You can find more about HBD in the following publications.
    - W. Anderson et al. arxiv:1103.4277v1,2011
    - I. Ravinovich et al. Nucl.Phys.A774:903-906,2006
    - A. Milov et al. J.Phys.G34:S705-708,2007
  - The second part of my thesis is devoted to the analysis of low mass vector mesons(ϕ and ω) in $p+p$ and $d+Au$ collisions via the di-electron channel, taken by PHENIX during the years 2005 and 2008. The di-leptons are one of the most promising probes for the early hot dense stages of relativistic heavy-ion collisons since they interact only electromagnetically. The related information can be found in the following analysis notes.
    an717[1], an618[2], an414[3]

  You can find more about my work in my Thesis, Final Report, Interim Report and Research Proposal,

Programming Skills

- Have experience in C++, Perl, csh/bash programminng under UNIX.
- Good experience in ROOT as the analysis tool/package of physics.
- Good knowledge of Latex for scientific writing.

Publications

- Publications and talks related to the thesis:
  - "D. Sharma, Electromagnetic Probes and Heavy Flavor, Invited talk at ICPAQGP 2010, Goa India.
  - "D. Sharma, ϕ-meson Production at RHIC energies using the PHENIX Detector", J. Phys. G36: 064023 (2009), arXiv:0901.3362.
  - "D. Sharma, Low Mass Vector Meson Measurements via Di-electrons at RHIC by the PHENIX Experiment", arXiv:0901.3360; *Parallel Talk at 18th International Conference and Nuclei (PANIC08).*
  - "Measurement of neutral mesons in $p+p$ collisions at $\sqrt{s_{NN}}$ = 200 GeV and scaling properties of hadron production." Phys. Rev. D83:052004,2011.
  - "A hadron blind detector for the PHENIX experiment at RHIC" ,I. Ravinovich *et al.* ,Nucl. Phys. A 774, 903 (2006) [arXiv:nucl-ex/0510024] ,*Proceedings of 18th International Conference on Ultrarelativistic Nucleus-Nucleus Collisions: Quark Matter 2005 (QM 2005), Budapest, Hungary, 4-9 Aug 2005*"

[1] https://www.phenix.bnl.gov/phenix/WWW/p/info/an/717/run6-ANv1.pdf
[2] https://www.phenix.bnl.gov/phenix/WWW/p/info/an/618/Deepali-ANv9-01.pdf
[3] https://www.phenix.bnl.gov/phenix/WWW/p/info/an/414/

- "W. Anderson *et al.* (including D. Sharma), Design, Construction, Operation and Performance of a Hadron Blind Detector for the PHENIX experiment", *Submitted to NIM, arxiv:1103.4277v1* .
- "Construction and expected performance of the hadron blind detector for the PHENIX experiment at RHIC" ,A. Milov *et al.* ,J. Phys. G 34, S701 (2007) [J. Phys. G 34, S705 (2007)] [arXiv:physics/0701273] ,*Proceedings of 19th International Conference on Ultra-Relativistic Nucleus-Nucleus Collisions: Quark Matter 2006 (QM2006), Shanghai, China, 14-20 Nov 2006*"
- "C. Woody *et al.* (including D. Sharma), Initial Performance of the PHENIX Hadron Blind Detector at RHIC.", IEEE Nuclear Science Symposium Conference Record NSS/MIC, 1002-1008(2009).
- "W. Anderson *et al.* (including D. Sharma), Understanding the gain characteristics of GEMs inside the Hadron Blind Detector in PHENIX.", IEEE Nuclear Science Symposium Conference Record NSS'07,6, 4662-4665(2007).
- "C.Y. Chi *et al.* (including D. Sharma), A faster digitizer system for the Hadron Blind Detector in PHENIX.", IEEE Nuclear Science Symposium Conference Record NSS'07,3, 1997-2000(2007).
- "C. Woody *et al.* (including D. Sharma), Prototype Tests and Construction of the Hadron Blind Detector for the PHENIX Experiment.", IEEE Nuclear Science Symposium Conference Record NSS'06,3, 1557-1561(2006).

- Other publications:
  - "Nuclear modification factors of ϕ meson in $d + Au$, $Cu + Cu$ and $Au + Au$ collisions at $\sqrt{s_{NN}} = 200$ GeV," Phys. Rev. C83, 024909 (2011).
  - "Detailed measurement of the e^+e^- pair continuum in p+p and Au+Au collisions at $\sqrt{S_{NN}} = 200$ GeV and implications for direct photon production", A. Adare *et al.* [PHENIX Collaboration], Phys. Rev. C81, 034911(2010).
  - "Dilepton mass spectra in p+p collisions at sqrt(s)= 200 GeV and the contribution from open charm", A. Adare *et al.* [PHENIX Collaboration], Phys. Lett. B670, 313(2009).
  - "Onset of pi-zero suppression studied in $Cu + Cu$ collisions at $\sqrt{(s_{NN})} = 22.4$, 62.4, and 200 GeV" ,A. Adare *et al.* [PHENIX Collaboration] ,Phys. Rev. Lett.101, 162301 (2008)
  - "Dihadron azimuthal correlations in Au+Au collisions at sqrt(s_{NN})=200 GeV" ,A. Adare *et al.* [PHENIX Collaboration] ,arXiv:0801.4545 [nucl-ex], Phys.Rev.C 78, 014901 (2008)
  - "Suppression pattern of neutral pions at high transverse momentum in Au+Au collisions at sqrt(s_{NN}) = 200 GeV and constraints on medium transport coefficients" ,A. Adare *et al.* [PHENIX Collaboration] ,arXiv:0801.4020 [nucl-ex], Submitted to Phys.Rev.Lett. 101, 232301 (2008).
  - "Cold Nuclear Matter Effects on J/Psi as Constrained by Deuteron-Gold Measurements at sqrt(s_{NN}) = 200 GeV" ,A. Adare *et al.* [PHENIX Collaboration] ,Phys. Rev. C 77, 024912 (2008) [arXiv:0711.3917 [nucl-ex]
  - "Transverse momentum and centrality dependence of dihadron correlations in Au+Au collisions at sqrt(s_{NN})=200 GeV: Jet-quenching and the response of partonic matter" ,A. Adare *et al.* [PHENIX Collaboration] ,Phys. Rev. C 77, 011901 (2008) [arXiv:0705.3238 [nucl-ex]
  - "Inclusive cross section and double helicity asymmetry for π^0 production in p+p collisions at sqrt(s)=200 GeV: Implications for the polarized gluon distribution in the proton" ,A. Adare *et al.* [PHENIX Collaboration] ,Phys. Rev. D 76, 051106 (2007) [arXiv:0704.3599 [hep-ex]
  - "Elliptic flow for ϕ mesons and (anti)deuterons in Au+Au collisions at $\sqrt{s_{NN}} =$ 200 GeV" ,S. Afanasiev *et al.* [PHENIX Collaboration] ,Phys. Rev. Lett. 99, 052301 (2007) [arXiv:nucl-ex/0703024]

- "J/psi production vs centrality, transverse momentum, and rapidity in Au + Au collisions at s(NN)**(1/2) = 200-GeV" ,A. Adare *et al.* [PHENIX Collaboration] ,Phys. Rev. Lett. 98, 232301 (2007) [arXiv:nucl-ex/0611020]
- "System size and energy dependence of jet-induced hadron pair correlation shapes in Cu + Cu and Au + Au collisions at s(NN)**(1/2) = 200-GeV and 62.4-GeV" ,A. Adare *et al.* [PHENIX Collaboration] ,Phys. Rev. Lett. 98, 232302 (2007) [arXiv:nucl-ex/0611019]
- "Energy Loss and Flow of Heavy Quarks in Au+Au Collisions at sqrt(s_{NN}) = 200 GeV" ,A. Adare *et al.* [PHENIX Collaboration] ,Phys. Rev. Lett. 98, 172301 (2007) [arXiv:nucl-ex/0611018]
- "Correlated production of p and anti-p in Au + Au collisions at s(NN)**(1/2) = 200-GeV" ,A. Adare *et al.* [PHENIX Collaboration] ,Phys. Lett. B 649, 359 (2007) [arXiv:nucl-ex/0611016]
- "J/psi production vs transverse momentum and rapidity in p + p collisions at s**(1/2) = 200-GeV" ,A. Adare *et al.* [PHENIX Collaboration] ,Phys. Rev. Lett. 98, 232002 (2007) [arXiv:hep-ex/0611020]
- "Measurement of high-p(T) single electrons from heavy-flavor decays in p + p collisions at s**(1/2) = 200-GeV" ,A. Adare *et al.* [PHENIX Collaboration] ,Phys. Rev. Lett. 97, 252002 (2006) [arXiv:hep-ex/0609010]
- "Scaling properties of azimuthal anisotropy in Au + Au and Cu + Cu collisions at s(NN)**(1/2) = 200-GeV" ,A. Adare *et al.* [PHENIX Collaboration] ,Phys. Rev. Lett. 98, 162301 (2007) [arXiv:nucl-ex/0608033]
- "Saturation of azimuthal anisotropy in Au + Au collisions at s(NN)**(1/2) = 62-GeV - 200-GeV" ,S. S. Adler *et al.* [PHENIX Collaboration] ,Phys. Rev. Lett. 94, 232302 (2005) [arXiv:nucl-ex/0411040]
- "Formation of dense partonic matter in relativistic nucleus nucleus collisions at RHIC: Experimental evaluation by the PHENIX collaboration" ,K. Adcox *et al.* [PHENIX Collaboration] ,Nucl. Phys. A 757, 184 (2005) [arXiv:nucl-ex/0410003]